User Manual
For
M3-C104 MDVR

Mobile Digital Video Recorder

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Notice

The information in this manual was current when published. The manufacturer reserves the right to revise and improve its products. All specifications are therefore subject to change without any notice.

The purpose of this manual is to kindly aid the user for the operation for our MDVR (especially for GUI setting). The user should have a basic understanding of computer operation and basic knowledge of how to connect peripherals and make some settings.

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Guarantee & Warnings

1) **Electrical Apparatus Safety**
   All installation and operation should comply with local electrical safety norms.
2) **Transportation**
   In the process of transportation, storage and installation, please avoid heavy stress, violent vibration, impact and water splashing.
3) **Installation**
   Install the equipment in accordance with the requirements, handle carefully. Do not heavily press the equipment before the MDVR installation is finished.
4) **Requirements on Engineers & Technicians**
   All the work of checking and maintenance should be done by qualified technicians and engineers. We do not undertake any responsibility caused by unauthorized modifications.
5) **Requirements on Environment**
   The equipment should be installed and stored in a cool and dry place, away from direct sunlight, flammable or explosive substances, etc. Keep gaps not less than 3cm around the device to facilitate ventilation for cooling.
6) **Accessories**
   Make sure to use accessories from the manufacturer recommended in the attachment.
   Insulate circuit ground and metal shell for all the peripherals.
   Before installation, please open the package and ensure that all parts are included.
   If there are any problems, please contact us as soon as possible.

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1. PRODUCT CHARACTERISTICS

1.1. OVERVIEW

This production belongs to the taxi intelligent system, using high-speed processor and embedded operating systems, composed by intelligent terminal and multi-information display. The intelligent terminal uses space-saving design with 6.2 inches touch screen, providing a excellence GUI for you. Combined with easy-operating system, taxi intelligent terminal will make positioning and monitoring, on-call scheduling, dynamic regulatory inspection, supervision and evaluation of the quality of service, online business management functions under control, which will not only increase the ability of regulation and decision analysis, but also increase the quality of all taxi services, which will let the information be shared in a large area. Besides, this product comply with many testing standards of China, and also includes several sensor to collect driving information, which will help you to achieve Real-time location tracking, monitoring, emergency alarm, speed alarm processing, information dissemination, and on-call scheduling functions.

All in all, this system will make every effort to ensure the personal and property safety for passengers as well as car drivers.

1.2. FEATURES

1) The compactness of intelligent terminal makes it easier for hiding and installation Fit all the business and technical requirements.
2) All the modules are connected with exquisite connectors, supporting quick disconnection, which is safe and easy to maintain.
3) Mirror recording via SD card for backup to get the important video files in the last minutes.
4) Include RS232、RS485、USB port.
5) Multi-information display, built-in non-contact IC card swipe machines, speakers, MIC.
6) Supports GPS for local tracking.
7) Supports 3G for love view and remote management
8) Intelligent service terminal built-in backup battery.

   Other additional:

   1. Service evaluator
   2. Alarm button
   3. Camera

1.3. SPECIFICATIONS

Items		Technical Index
Product Series		M3-C104
Function Overview		Recording, storage, playback, on-call dispatching, vehicle status management
Video	Input	4 channels
	Output	1 channel
	Video Signal Standard	Current level : 1Vpp, Impedance : 75Ω NTSC/PAL optional
Audio	Input	4 channels
	Output	1 channel
	Audio Signal Standard	Current level : 1Vpp, Input impedance : 9.4kΩ
Display (External Screen Needed)	Display Split	1/4/9 Screen display
	OSD	GPS information, alarm, temperature, voltage, device information, firmware version, MCU version
	Operation Interface	Semi-transparent GUI
Recording	Video/Audio Compression	H.264/ADPCM
	Image Resolution	PAL: D1(704x576), HD1(704x288), CIF(352x288) NTSC: D1(704x480), HD1(704x240), CIF(352x240)
	Image Quality	1-8 levels adjustable (1 is the best)
	Recording Mode	General/schedule/alarm
	Pre-recording	0-60minutes
	Post-recording	0-30minutes
	Mirror recording	Yes
Playback	Playback Channel	1 channel by local playback, 1/4/8 channels by software playback
	Search Mode	Date/time, channel, event
Network	3G	EVDO/WCDMA optional, SMA port
Locating	GPS	Location tracking, speed detection and time sync
Storage	SD Card	Dual SD Cards
Interface	USB	USB2.0 × 2
	SD	SD × 2
	Sensor	8 inputs, 2 outputs
	Speed	1 channel pulse speed detection
	Serial	5xRS232, 1xRS485
Power	Input	DC6-36V
	Output	1A@5V，1A@12V
	Power consumption	24W
	Hibernation Power	3W

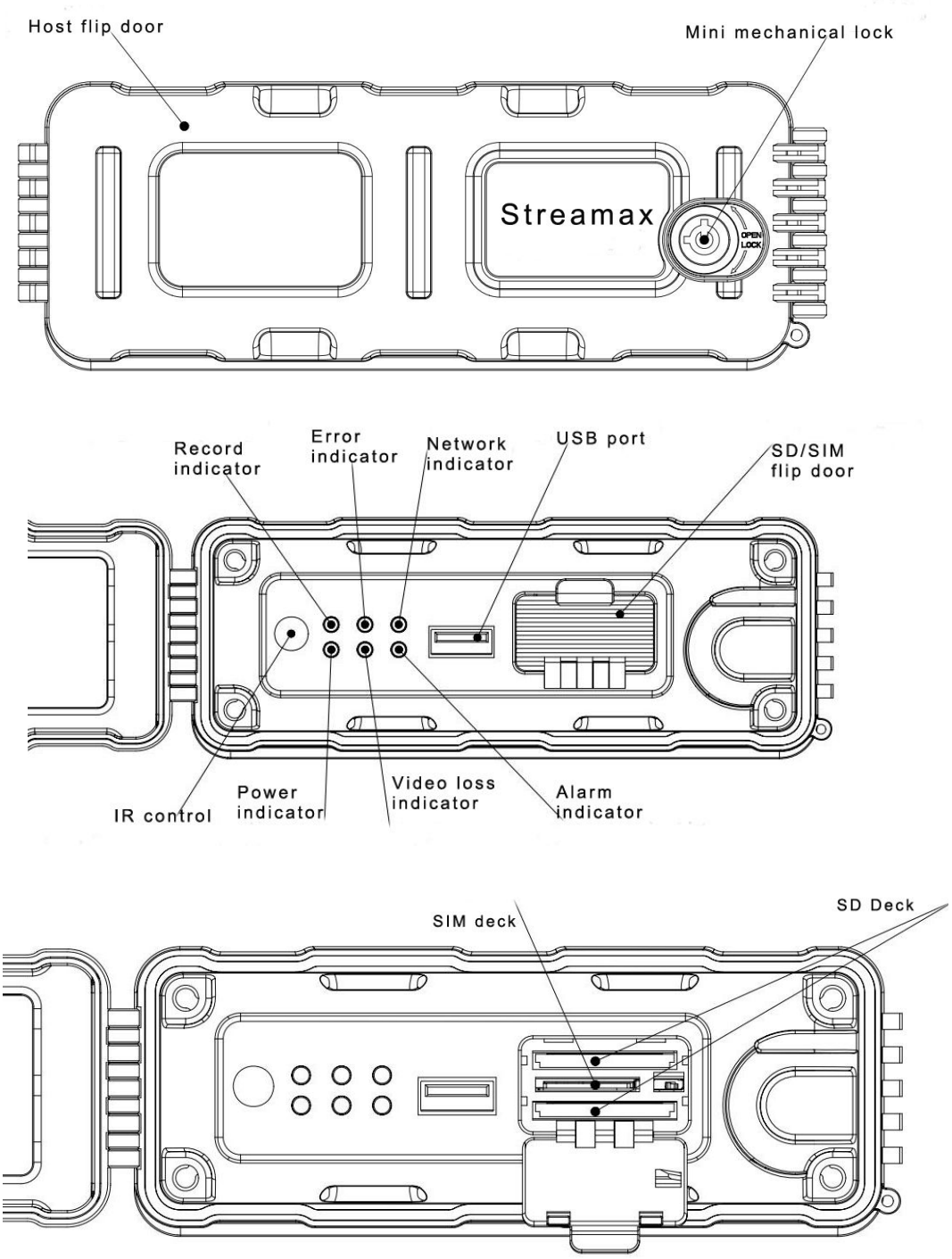
	Consumption	
	Built-in lithium battery	600mAh
Physical Characteristic	Dimension (L x W x H)	180mm*140mm*50mm
	Weight	0.75Kg
Operating Environment	Temperature	-30℃~70℃
	Relative Humidity	20~90%

1.4. MULTI-INFORMATION DISPLAY SCREEN

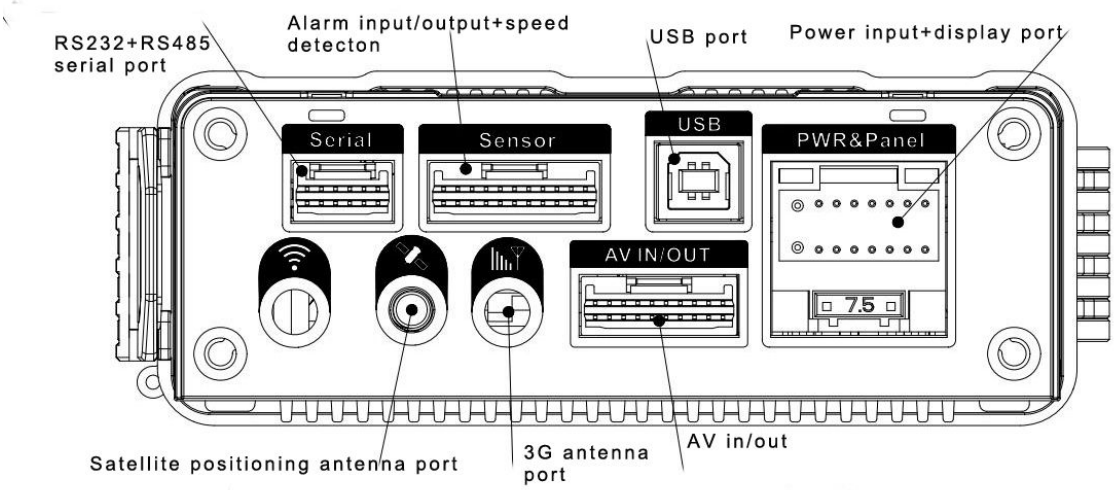
Product Name		**TP1**
Screen	Size	6.2 inch
	Resolution	800*480
	Viewing angle	Horizontal 150 degree, Vertical 140 degree
Audio	Audio Input	Built-in high sensitivity MIC
	Audio Output	Built-in 2W speaker
Interface	9PIN Aviation-din connector	Connection to the host (including 1 RS232)
	USB	USBx1
Power	Power consumption	4W
	Input	12VDC
Physical Characteristics	Dimension	215.5mm*98.4mm*35mm
	Weight	0.55kg

1.5. EXTERNAL INTERFACE

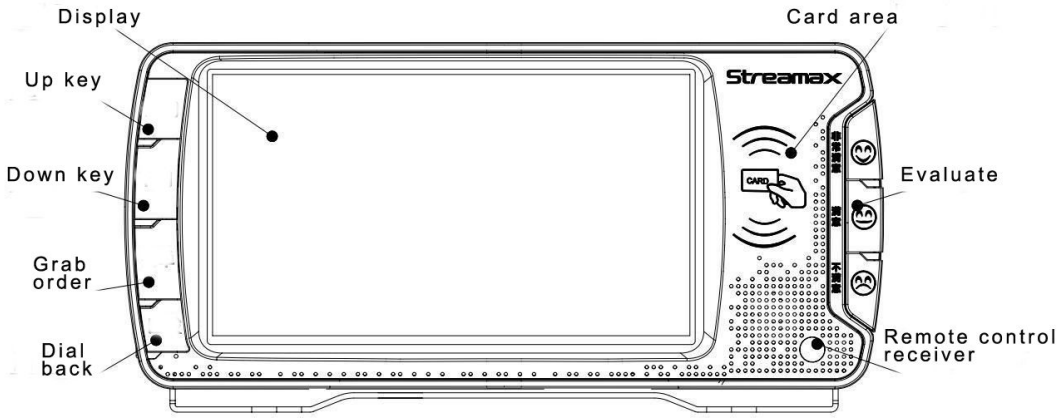
THE FRONT PANEL

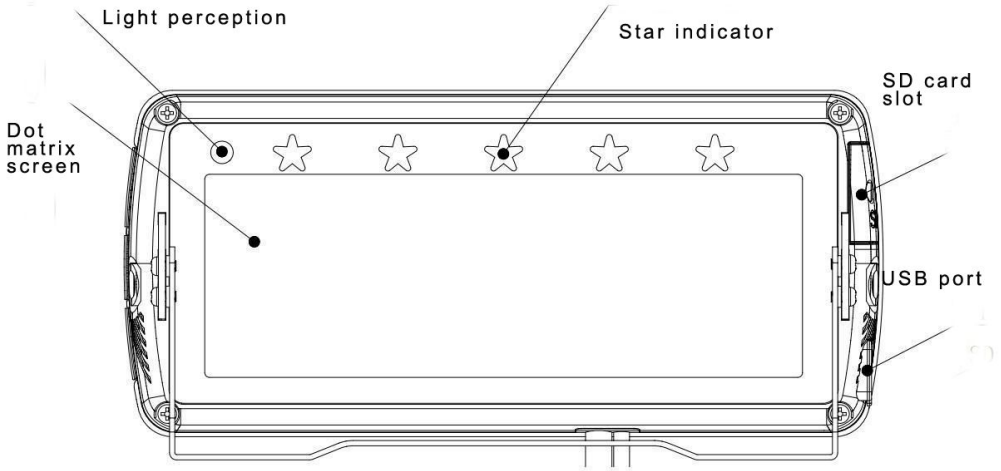


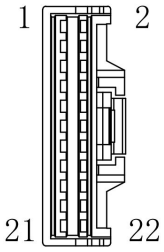
THE REAR PANEL



MULTI-INFORMATION DISPLAY SCREEN



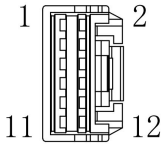




1.6. INTERFACE DEFINITION

1) INTELLIGENT SERVICE TERMINAL

SERIAL CABLE

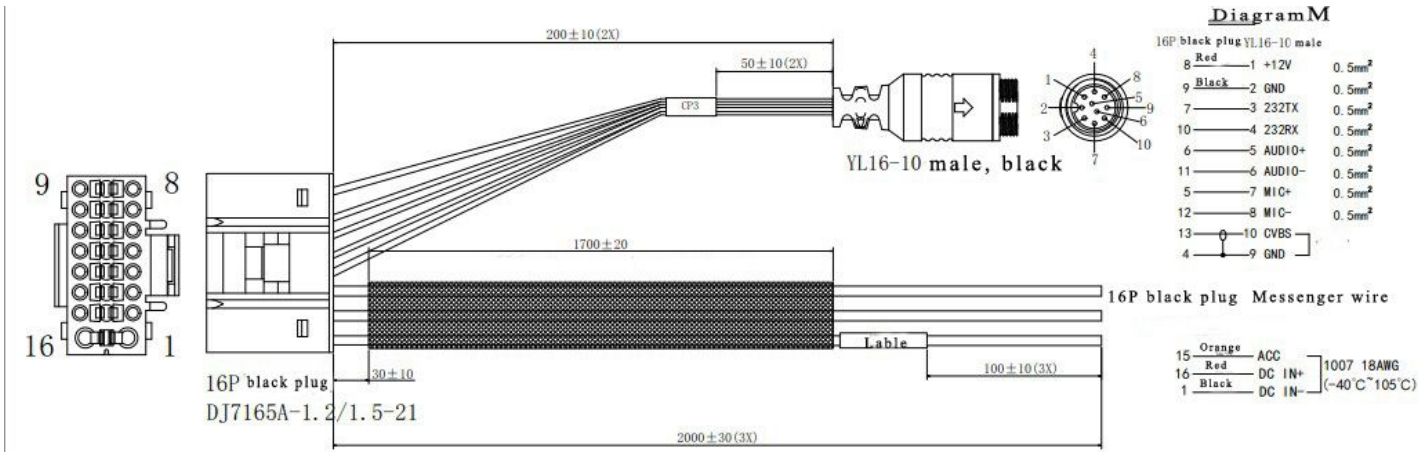


Pin	Definition	Description	Pin	Definition	Description
1	232TX-1	RS232 Send	7	232TX-3	RS232 Send
2	232RX-1	RS232 Receive	8	232RX-3	RS232 Receive
3	232TX-2	RS23 Send	9	232TX-4	RS232 Send
4	232RX-2	RS232 Receive	10	232RX-4	RS232 Receive
5	+5V	DC 5V Output	11	485A	RS485 Send
6	GND	Power Ground	12	485B	RS485 Receive

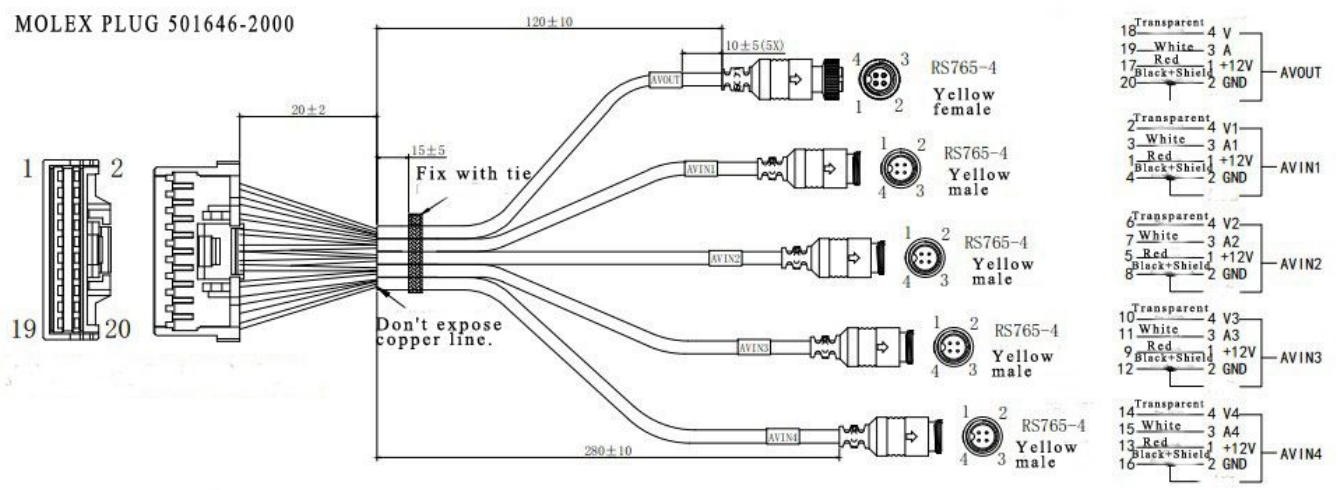
ALARM LINE

Pin	Definition	Description	Pin	Definition	Description
1	SENSOR IN1	Detect alarm input	12	SENSOR-OUT3	Linkage output
2	SENSOR IN5	Detect alarm input	13	SNESOR-OUT2	Linkage output
3	SENSOR IN2	Detect alarm input	14	SENSOR-OUT4	Access service evaluation
4	SENSOR IN6	Access service evaluation	15	232TX-0	Debug Interface
5	SENSOR IN3	Detect alarm input	16	232RX-0	Debug Interface
6	SENSOR IN7	Access service evaluation	17	SPEED IN	Detection speed
7	SENSOR IN4	Detect alarm input	18	GND	Power ground
8	SENSOR IN8	Access service evaluation	19	RSV	Reservations
9	+12V	DC 12V Output	20	RSV	Reservations
10	GND	Power ground	21	RSV	Reservations
11	SENSOR-OUT1	Linkage output	22	RSV	Reservations

2) POWER AND DISPLAY TERMINAL

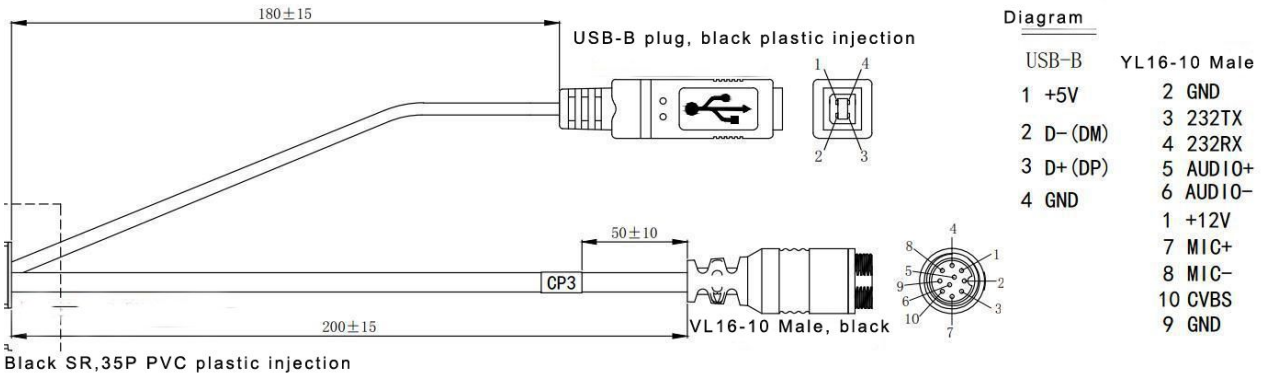


3) DEFINITION OF AUDIO AND VIDEO INPUT AND OUTPUT WIRING

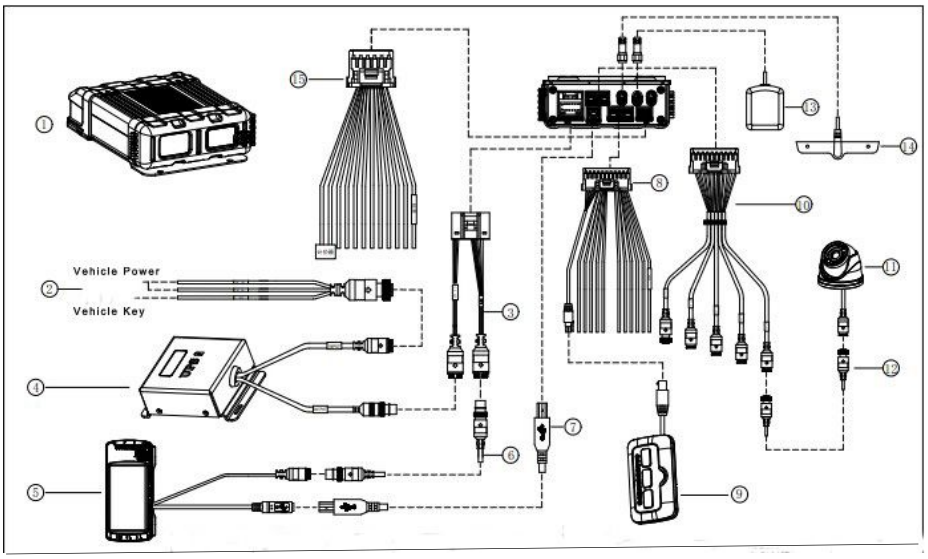


4) MULTI-INFORMATION DISPLAY SCREEN

CP3 AND USB CABLE



5) SYSTEM CONNECTION



Serial No.	Name	Quantity	Remark	Serial No.	Name	Quantity	Remark
1	Host	1		9	Evaluation server	2	
2	Power input cable	1		10	AV in/out line	2	
3	Power transforming cable	1		11	Camera	1	
4	UPS	1		12	Video extension line 5m	1	
5	Multi-function Display	1		13	GPS antenna	1	G503, 5m
6/7	Extension line	1	6: CP3 extension line/7: USB extension line	14	WCDMA-T antenna	1	WCDMA(HSDPA)2170-2.5DBI, L=3M
8	Alarm serial cable	1		15	Serial antenna	1	Serial line(with fare meter)

PART NO	PART NAME M3-C104 DIAGRAM	DRAWING NO
PRODUCT NAME	SPEC	
MATERIAL	FINISH	DESIGN BY PGM 2014.06.19
TOLERANCE RANGE / TOLERANCE / RANGE / TOLERANCE 0-6mm ±0.05 50-100mm ±0.20 6-20mm ±0.10 100-150mm ±0.25 20-50mm ±0.15 >150mm ±0.30	ALL DIMENSIONS ARE IN MM SCALE 1:1 QUANTITY 1	APPROVED BY XXXX SHEET 1 OF 1

6) FUNCTION INTRODUCTION

a) MULTI-MEDIA

There are 4 camera interfaces in the intelligent service terminal and they can continuously record for whole day, supporting snapshot function and dual SD cards.

b) DRIVER MANAGEMENT

The multi-information display supports IC card wiping, TSAM module, Encryption Management for qualification certificate.

c) ON-CALL DISPATCHING

Supports on-call list, one key navigation, call passengers and vent orders. The platform will give the detailed information to the drivers once they get a bill.

d) NAVIGATION BUTTON

Drivers may use this function as soon as they get a bill and go to the location via the map in the intelligent service terminal.

e) INFORMATION SERVICE

Drivers can get all the information from the platform through the screen.

f) CALL MANAGEMENT

User can set the phone book, call permissions, wiretapping and other functions.

Drivers can call a specific number for help through the screen.

g) SERVICE EVALUATION

Customers can make evaluation of the driver and the result will be uploaded to the central platform as a reference.

h) SMART STATUS SCREEN

The empty, on-call, outage information will be displayed on the back of the multi-information display screen. There are 7 levels for the brightness to be adjusted, and also can see the driver's serving degree.

i) ALARM REMINDER

Provide anti-robbery alarm, warning, speed alarm, equipment failure alarm, position offset and other alarm functions.

j) LOCATION TRACKING

Real-time monitoring of vehicle location, the center can know the location of the vehicle through the map in the platform.

k) HOST MANAGEMENT

Self-test, inspection and other functions.

l) REMOTE CONTROL

In case of an emergency, the center can control the vehicle to reduce loss.

m) REMOTE MAINTENANCE AND UPGRADE

You can change the parameters or upgrade the firmware version remotely by receiving the order from the center platform.

n) OPERATIONAL DATA COLLECTION

Have on-call fees and surcharges synthesis billing functions, providing many Statistical functions for the driver.

o) VALUE-ADDED SERVICES

Intelligent service terminal can realize more value-added services by connecting to other external accessories.

2. QUICK START GUIDE

2.1. TAXI DISPATCH SYSTEM PLATFORM

Note: Smart car terminal, video and navigation interface, press the F3 key on the remote control to enter into the video screen interface, press the F4 key to enter the navigation interface.

2.1.1. DRIVER MANAGEMENT

DRIVER LOG IN : Supports 3 kinds of landing approaches, swiping card, card number and driver information.

Swiping card landing : Swiping the card on the right of the screen.

Enter the card number landing : Enter the number and log in.

Select the driver landing : Choose your own picture to log in.

DRIVERS SIGN-OFF

If the driver swipes his card again after he has signed in successfully,he will enter into the sign-off interface, press OK to sigh off.

2.1.2. MAIN INTERFACE

LOG IN : Drivers will see the interface below after logging in.

BUTTON : 6 buttons including on-call scheduling, navigation, phone, revenue and settings.

DISPLAY : The information shown in the screen includes : operating times, operating income, vehicle statues, speed, direction and module statues.

2.1.3. ON-CALL

ON-CALL BILLING

When there is a bill, the screen will pop up. Once the driver gets the bill, he will get the customer's

location information.

ORDER DETAILS

After driver gets the bill, the screen will show information in detail, such as the customer's location, his phone number... Driver could call the customer, or cancel the order if he could not go to the place.

ORDER SEARCH

Press on-call button in the main interface will enter into the search interface, the search interface includes information about the orders he gets, driver could search for the information he wants.

2.1.4. INFORMATION SERVICES

PACKETS

Packets service have date, time and content, and whether viewed this packet identifier, driver can choose to broadcast any packet he wants.

EVENTS

Driver could report the events shown on the screen by pressing a button.

QUESTION

Driver can ask questions through the platform and it will show at the screen, drivers could answer.

TELEPHONE CALL

Pressing telephone button can enter into operating interface. Driver can insert the number himself, and the records could be searched. There is also a phone book for searching for telephone number.

2.1.5. REVENUE MANAGEMENT

Press Revenue Management button to enter operating interface, including Running time, running mileage, revenue amounts, and the upload status.

2.1.6. OPERATION MANAGEMENT

Press Setting button to enter into operating interface.

Equipment inspection : Get the current statues of the device.

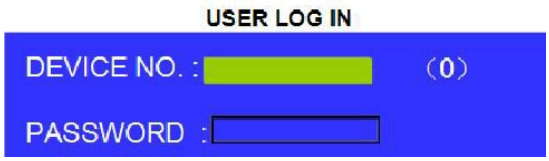
System setting : Manage TTS volume, call volume, the LCD screen brightness and screen calibration.

Operation and maintenance management : Manage navigation screen, SCM software version upgrades, and equipment storage remaining.

2.2. MDVR SYSTEM PLATFORM

2.2.1. USER LOG IN

After the device boots up, press LOGIN/LOCK or SETUP to enter the GUI as follow.



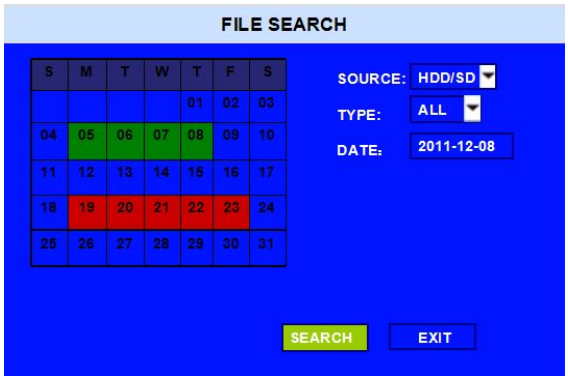
ENTER DEVICE NO.: Input the number according to the number in the bracket.

ENTER PASSWORD: Video searching and information menu checking are available if you log in with the user password while device parameters setting is possible with administrator password.

User default password is 22222222, and Admin password is 88888888.

2.2.2. LOCAL VIDEO CHECK, PLAYBACK AND BACKUP

VIDEO CHECK: The user can search the files according to file types, video channels, date/time and start time. The file types include All and Alarm (Green module indicates general record while red module points to alarm record.)



The search results will be shown as follows.

VIDEO PLAYBACK: Choose the channel and time, click ENTER to playback.

VIDEO DATA EXPORT: If there are videos available at the channel you choose, click the button and user can export all the videos during the time to the storage device connected via USB.

2.2.3. STORAGE DEVICE FORMAT

Format: User can format both hard disk and external storage devise by entering into following path in GUI: SYSTEM>>FORMAT

⚠ Please format the SD card or hard disk when used at the first time.

2.2.4. SYSTEM UPGRADE

Please create one folder named **dvrupgrade** in root directory in thumb drive and then copy the software upgrade file to this folder.

Insert the thumb drive after the host boots.

After choosing SYSTEM >> UPGRADE, user needs to click Upgrade and then start to upgrade it.

The indicator LED of the front panel of MDVR flashes simultaneously when upgrading, and the screen pops up **System Update**.

After upgrading, the device will restart automatically and pops up **System Initializing**.

After restarting, check whether the version is the latest one in the menu Upgrade.

3. REFERENCE APPENDIX

3.1. STORAGE CAPACITY CALCULATION

1) IMAGE QUALITY & STREAMS

	Image	1	2	3	4	5	6	7	8
Stream (Kbps)	D1	2048	1536	1230	1024	900	800	720	640
	HD1	1280	960	768	640	560	500	450	400
	CIF	800	600	480	400	350	312	280	250

2) RECORD FILE SIZE CALCULATION

Rec. file size for each channel is:

Recording time (s) x Stream (Kbps) / 8 / 1024 = File Size (MB)

e.g. The file size of the Image 1 with D1 resolution within 1 hour:

3600 x 2048 Kbps / 8 / 1024 = 900 MB

3) IMAGE QUALITY & RESOLUTION

	Image Quality	1	2	3	4	5	6	7	8
Resolution	D1	900	675	540	450	395	351	316	281
	HD1	562	422	337	281	246	219	198	176
	CIF	351	264	211	176	153	137	123	110

3.2. FREQUENTLY ASKED QUESTIONS

1) The system can't start?

Usually this problem results from the incorrect power connection. Please follow below steps to check the power connection:

1. Check the input power, whether the power wire is connected correctly, whether the ground wire is connected back to the battery, and whether the fuse on the power wire is in good condition.
2. Check whether the ACC signal wire input to the power is with voltage higher than 7 V.
3. Check whether the device key is closed.

2) The MDVR restarts uninterruptedly?

Please follow below steps to check it:

1. Check whether the voltage of MDVR is insufficient. If the voltage is less than the start-up voltage of the device, the device would always restart.
2. The problem in hard disk/SD card may cause the failure to start. Take off the storage part and check whether it is broken down.

3) The device can't record?

Usually this problem results from the storage disk or camera. Please follow below steps to check it:

1. Check whether the storage disk is installed, whether it is in good contact, and whether the disk can be read normally in computer.
2. Check whether the storage disk is formatted. The storage disk should be formatted before normally storing record files.
3. Check whether there is video signal input into the device from camera, and whether there is video/image on the screen.

4) There is no voice in record file?

Please follow below steps to check it:

1. Check whether there is an external pickup, or whether the camera features with the function of audio collection.
2. Access to Video Channel Settings, check if Audio is set on.
3. There must be video input into the channel for recording and it must record normally.

5) The GPS works abnormally?

Please follow below steps to check it:

1. Check whether the GPS antenna is installed correctly. There is a silk print logo on the GPS antenna holder behind the host device.
2. Check whether the antenna receiver is sheltered. It should not be covered by any stuff, which may cause it not to receive signals.
3. Environmental influence such as tree shades, being inside tunnel, driving near tall building or elevated roads, thunderstorms or other weather influence, etc. can also cause signal loss or receiving wrong signals.

6) The device can't shutdown in ignition switch mode?

Please follow below steps to check it:

1. Check if the ACC line connection mode is correct; and check whether there is voltage on ACC yellow line when the key is turned off.
2. If the device has been set with schedule recording, it can't shutdown if it is still during recording time of the task table.